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EPML
Environmental Project Management, Inc.

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INITIAL SITE CHARACTERIZATION AND SUBSURFACE INVESTIGATION REPORT

4TH AND GAMBELL
ANCHORAGE, ALASKA

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EXECUTIVE SUMMARY

Field Activities

Environmental Project Management, Inc. (EPMI) performed a limited site investigation for the property on the east corner of 4th Avenue and Gambell Street in Anchorage, Alaska. A review of readily available historical documents was performed. EPMI also spoke with individuals familiar with the property in order to assist with the site investigation. The subject site was not found in the Alaska Department of Environmental Conservation (ADEC) records for contaminated sites. The ADEC records listed a few sites in the vicinity of the subject site. The records showed that these sites did not have an immediate adverse affect on the subject site.

EPMI performed two days of on site investigation by excavating, later followed by monitoring well installation and sample collection. The work consisted of excavating with a 33,000 pound track mounted hydraulic excavator, collecting and field screening samples, collecting samples for shipment to Wy'East Environmental Sciences, Inc. in Portland, Oregon, backfilling and grading the excavated areas. Three monitoring wells were installed and samples were collected between October 21 through October 28, 1997.

The historical research showed two main areas of interest. The first area was the hydraulic hoists, which were visible at the ground surface. This area is the location of the former NC Tire facility. The other area was the west end of the property where a dry cleaning business once operated. Additional information collected by EPMI propted EPMI to look for underground tanks near each of the two interior telephone poles at the site, and one west of the southern part of the former NC Tire facility.

EPMI began the on site work by removing parts of the concrete slab on grade around the visible hydraulic hoists at the east end of the property. Near the hydraulic hoists were underground collection sumps. The sumps were all connected by underground piping. The piping led to a log crib; an underground box made of wood. It is assumed that the crib was used for sewer disposal as well as rinse and wash water for the tire facility. Three samples from the material in the area of the crib associated with the tire facility were collected and field screened. Four analyses were conducted on the three samples. The results can be reviewed in Appendix C.

EPMI uncovered seven hydraulic hoists, only three were visible prior to excavation. At one of the hoist locations, a tank full of approximately 200 gallons of hydraulic oil was uncovered. We also uncovered two cinder block walls, one of which housed numerous piping runs. Soil samples near the hoists, the reservoir, and at a break in the piping were collected. Six soil samples were collected and field screened in the areas of the piping and the hoists.

While following the piping to the crib, EPMI uncovered an underground storage tank with an approximate capacity of 500 gallons. The tank appeared to be empty. One sample from beneath

the tank was collected, field screened, and sent to the laboratory for analysis.

Near the east interior telephone pole, EPMI uncovered one underground storage tank with an approximate capacity of 1,000 gallons. Some residual product (approximately one inch) remained in the tank. One sample from beneath the tank was collected, field screened, and sent to the laboratory for analysis.

In the area where the dry cleaning facility was thought to be located, EPMI excavated three trenches across the location. The trenches uncovered four empty drums and a log crib. The drums were marked by the manufacturer for use in dry cleaning. One sample from the drum area was collected, field screened, and sent to the laboratory for analysis.

The material associated with the wood crib uncovered in the area of the dry cleaning business did not have the odor associated with the crib encountered near the former NC Tire facility. One sample from material at a depth of 12 feet below ground surface in the area of the crib was collected, field screened, and sent to the laboratory for analysis.

Laboratory Results

Three of the six samples collected in the area of the hydraulic lifts and associated piping had detectable levels of hydrocarbon. The levels ranged from 253 parts per million (ppm) to 4,830 ppm. Based on the information collected during this limited investigation, EPMI is estimating that approximately 100 cubic yards of soil may be contaminated with heavy oil.

The laboratory results from the samples collected near the underground storage tanks reveal that the material near the 1,000 gallon tank does not have any detectable hydrocarbons, and in the area of the 550 gallon tank the level was 223 ppm. The volume of hydrocarbon affected soil in this area is probably not more than 5 cubic yards.

The laboratory results from the three samples collected associated with the tire facility crib show detectable levels of lead, hydrocarbons, and volitile organic compounds (VOC). The total lead content in the material was detected at 996 ppm. Numerous other contaminants were detected and can be reviewed in Table 2. Based on the information collected during this limited investigation, EPMI is estimating that the volume of contaminated material in this area is approximately 50 cubic yards.

The laboratory results from the samples collected associated with the dry cleaner's drum and crib area detected 3,200 parts per billion (ppb) of Tetrachloroethylene in the buried drum area and 1,000 ppb of Tetrachloroethylene in the crib area. An additional sample was collected during monitoring well installation. The laboratory analysis of a soil sample from Monitoring Well 1 (MW-1) shows the soil to contain Tetrachloroethylene. The laboratory analysis for the water

sample from MW-1 also contained Tetrachloroethylene. Tetrachloroethylene remediation standards are usually negotiated with the regulatory agencies. The regulatory guideline for Tetrachloroethylene in soil with ah annual precipitation of less than 40 inches is 160 ppm based on ingestion and 110 ppm on inhalation. Therefore, the site may be in compliance as far as Tetrachloroethylene contaminated soil is concerned, pending regulatory review.

Monitoring Well Installation

Three monitoring wells were installed and samples collected. The field activities took place from October 21 through October 28, 1997. Figure 3 in Appendix A shows the approximate location of the wells. Each well was drilled to a depth of 45 feet below the ground surface using an 8 inch hollow stem auger Water was encountered in each well at approximately 40 feet below ground surface. Monitoring well construction reports completed by Quality Environmental Sampling can be reviewed in Appendix H.

Water samples were collected from each of the monitoring wells after purging 3 casing volumes from each well. Samples collected were labeled MW-1, MW-2, and MW-3, corresponding to the well from which the sample was collected. Water from MW-1 was analyzed for VOCs, metals, and petroleum hydrocarbons. The analyses showed that metals and petroleum were not detected in the water for MW-1. The only VCC detected in MW-1 was Tetrachloroethylene. This compound was used by dry cleaning facilities. Water from MW-2 was analyzed for VOCs, metals, and petroleum hydrocarbons. The laboratory did not find any of the compounds above the detection level of the analyses procedures. Water from MW-3 was analyzed for VOCs. The laboratory did not find any of the compounds above the detection level of the analyses procedure. The laboratory detected Tetrachloroethylene and Total Xylenes in soil sample MW-1 S-2.

Former NC Tire Facility Removal and Treatment Cost Estimate

Assuming the total yardage to be removed is 200 cubic yards, the estimated cost for excavating contaminated soil, removal and disposal of two underground storage tanks, removal and disposal of hoists and associated piping, disposal of 200 gallons of hydraulic fluid, sample collection, laboratory analysis, treatment, confirmation sampling, analysis, site restoration, and reporting is approximately $25,000. This is an estimate and will vary depending upon the scope of work.

Former Dry Cleaning Facility

The soil and groundwater laboratory analyses of the samples from the area of the former dry cleaning facility displayed levels of Tetrachloroethylene of 2,200 parts per billion (ppb) and 4,250 ppb respectively. The regulatory guideline for Tetrachloroethylene in soil with an annual

precipitation of less than 40 inches is 160 ppm based on ingestion and 110 ppm on inhalation. The soil may not be the driving factor for remediation, other than it possibly leaching Tetrachloroethylene into the groundwater. The regulatory guideline for groundwater impacted by Tetrachloroethylene is 5 ppb. At a concentration of 4,250 ppb, it appears the water does not meet this guideline. The guideline is used by the regulatory agencies for establishing cleanup levels on a case by case basis. An estimate of groundwater cleanup costs is not practical until the treatment level is discussed with the regulatory agency. EPMI would like to note that Tetrachloroethylene can be treated through aeration and biological treatment. The contaminant is heavier than water, causing it to sink. Because it sinks, it is very difficuh to find the horizontal and vertical limits of the contaminated aquifer.

Risk Based Corrective Action

Risk Based Corrective Action (RBCA) is an option being used as an altemative to remedial action. In a RBCA, the threat that the contaminant at the site poses to human health and the environment is evaluated. The intent of the process is to make recommendations to ADEC using imperical data and conceptual models that the site does not pose a risk to human health or the environment. The RBCA report makes a recommendation to the regulatory agency for an acceptable level of risk at the site for human health and the enviroament. In order to achieve the level of risk described in the RBCA report, some remedial action, monitoring, or deed restrictions may be required.

The risk to human health and environment is not known until a RBCA is completed. Some sites cannot be handled by RBCA. The costs associated with RBCA are wide ranged and dependant upon the site characteristics as well as the contaminants. To complete a RBCA addition site characteristics would need to be collected, as with implementing any remedial option. Once these characteristics are known, a cost estimate can be completed.

1.0 INTRODUCTION

Environmental Project Management, Inc. (EPMI) was contracted to conduct an investigation of potential environmental issues for lots 8A, 10, 11, and 12 (collectively referred to as subject site) located on the northeast comer of 4th Avenue and Gambell Street in Anchorage, Alaska. Figure 1 in Appendix A provides the location of the site. The contract was executed by EPMI and Skinner Corporation on July 28, 1997.

2.0 HISTORICAL INFORMATION

EPMI reviewed the readily available records of the Alaska Department of Environmental Conservation (ADEC), Public Works, U.S. Geological Survey Water Resources Divdsipn, City Survey historical logs, historical aerial photographs, Property Appraisal - City Hall, Planning and Zoning - City Hall, and the Fire Department.

2.1 Alaska Department of Environmental Conservation

The readily available information on file at the ADEC for current and historical sites was reviewed by EPMI. The ADEC records were searched to determine if any underground storage tanks were registered or decommissioned at the subject property. The records did not indicate that any tanks were registered or were any decommissioned at the subject property.

The records indicated that the ADEC is aware of a few sites of environmental interest in the vicinity of the subject property. A fuel station to the south of the subject property is being monitored for a release. The hydrolugical data presented in the file reviewed by EPMI indicated that the site did not appear to have an immediate environmental impact on the subject property. The file noted that the type of soil in the area is sand and gravel to approximately 50 feet below ground surface.

Another site with an ongoing remedial action is to the east of the subject site. This site did not appear to have an inunediate environmental impact on the subject property at the time of this investigadon.

An auto body repair shop operates to the west of the subject property. The facility appears to be an old gas station. The facility did not appear on any of the records reviewed by EPMI at the ADEC.

2.2 Public Works

EPMI reviewed records at the Public Works facility located on East Tudor Road in Anchorage, Alaska. EPMI was looking for historical documentation of the construction and/or demolition of the NC Tire facility or the dry cleaning facility. We did not find any as-built drawings for either of the facilities.

A demolition permit dated October 4, 1977 was found. A copy of the permit is included in Appendbx E. Cleveland Trucking-Excavaung is named as the demolition oontractor. EPMI was not able to contact Cleveland Trucking-Excavating. We did not find the business in the phone book and the numbers hsted on the permit are not for Cleveland Trucking-Excavating.

EPMI found a Plat of 26A East Addition. The Plat is dated May 29, 1964. It does not show the fornier NC Tire facility, but it does show the location of the dry cleaning facllity.

3,0 SITE INVESTIGATION

3.1 Site Layout

The site is a vacant lot situated on the north side of 4tb Avenue between Gambell and Hyder Street. Historical aerial photographs (Appendix B) show the structures that once existed at the site. The former NC Tire operated on the east end of the site. The former NC Tire building layout ran north and south. Between 1954 and 1971, an addition was consmicted on the north end of the property, perpendicular to the original building. According to the aerial photographs reviewed by EPMI, no other permanent structures were added in lhe NC Tire area. In October of 1977, the lacillty was demolisbcd. It was in the area of the fonner NC Tire facility that EPMI uncovered the hydraulic lifts, sumps, underground storage tanks, and a log crib.

The historical photographs show a stnicture on the west side of the properiy. EPMI found a Plat of 26A East Addition at the Public Works office. The Plat is dated May 29, 1964. It does not show the fornier NC Tire facihty, but it does show the location of the dry cleaning facility. A copy of the surveyors note is included in Appendix E.

3.2 Hydraulic Lift Areas

The hydraulic lifts were located north of center of the foot print for former NC Tire facility. The location of the lifts is depicted by Figure 1 in Appendix A. EPMI began the site investigation with the eastern most location of the lifts.

3.2.1 Excavation

A track mounted hydraulic excavator was used to remove concrete covering the lifts. Only three were visible prior to excavation, seven were uncovered. At one of the hoist locations, a tank full of approximately 200 gallons of hydraulic oil was uncovered. Also uncovered were two cinder block walls, one of which housed numerous piping runs. Soil samples near the hoists, the reservoir, and at a break in the piping were collected.

We believe, near the hydraulic hoists were underground collection sumps. The sumps were all connected by underground piping. The piping was uncovered by excavating next to the pipe, allowing the soil to cave in from around pipe. By using this method of excavation, we were able to uncover the piping runs with minimal disturbance. During the excavation, a photoionization detector (PID) was used to indicate the most likely locations of contaminated soil. PID screening methods can be reviewed in Appendix F. The piping led to a log crib. The log crib is an underground box made of wood. It appeared that all of the piping from the facility emptied into the log crib. Therefore, it is assumed that the crib was used for sewer disposal as well as rinse and wash water for the tire facility. Three samples were collected and field screened from the material in the area of the crib associated with the tire facility. Four analyses were conducted on the three samples.

3.2.2 Sampling

Seven soil samples were collected and field screened in the areas of the piping and the hoists. The approximate sample locations are shown in Figure 2. The depth of the sample and the corresponding PID reading is also recorded on the Figure. The samples are S-8, S-9, S-10, S-12, S-13, and S-14. The six samples were analyzed by Wy'East Environmental Sciences of Portland, Oregon. The soils were tested for total petroleum hydrocarbon content. The sampling protocol can be reviewed in Appendix F. Tables in Appendix C provide the laboratory results as well as the cortesponding PID readings for each sample. The laboratory report can be reviewed in Appendix D.

3.2.3 Estimated Volume of Contaminated Soil

Three of the six samples collected in the area of the hydraulic lifts and associated piping had detectable levels of hydrocarbon. The levels ranged from 253 parts per million (ppm) to 4,830 ppm. At this time, we are estimating that approximately 100 cubic yards of soil may be contaminated with heavy oil.

3.3 NC Tire Log Crib

The log crib was discovered west of the northern part of the former NC Tire facility.

3.3.1 Excavation

The log crib was discovered by following the piping discovered while excavating in the hoist area. The piping led to a log crib which was apparently used to handle the wastes from the facility. The crib was a wood box with approximate dimensions of 8 feet wide by 8 feet long and 8 feet deep. The crib started at approximately 12 feet below ground surface.

3.3.2 Sampling

Three soil samples were collected and field screened in the crib area and one near a break in the piping leading to the crib. Samples S-2, S-3, and S-4 were collected from the material in the crib. Sample S-1 was collected from the soil beneath the break in the piping leading to the crib. The locations of the samples are shown in Figure 2. The depth of the sample and the corresponding PID reading are also recorded on the Figure. The samples were analyzed by Wy'East Environmental Sciences of Portland, Oregon. Sample S-1 was tested for total petroleum hydrocarbon content and for total metals. Samples S-3 and S-4 were selected to be sent to the laboratory because they had the higher PID readings and represented the top and near bottom of the crib location. S-3 and S-4 were analyzed for total metals and for volatile organic compounds (VOC). The VOC analyses includes some of the petroleum hydrocarbon constituents.

The sampling protocol can be reviewed in Appendix F. The tables in Appendix C provide the laboratory results as well as the corresponding PID readings for each sample. The laboratory report can be reviewed in Appendix D.

3.3.3 Estimated Volume of Contaminated Soil

The laboratory results from the three samples associated with the tire facility crib show detectable levels of metals, hydrocarbons, and solvents. The estimated volume of contaminated material in this area is approximately 50 cubic yards. The vertical and horizontal extent of the affected soil was not fully delineated in this limited site investigation.

3.4 NC Tire Heating Oil Tanks

Two underground storage tanks were found at the site. EPMI is assuming that the tanks were used for heating oil storage. EPMI also looked in two other locations where people had indicated tanks may have existed. EPMI excavated west of the south side of the former NC Tire faciilty. During this excavation, EPMI did not observe any evidence of an underground storage tank. An additional excavation was attempted near the west interior telephone pole soutb of the alley. Concrete was present at the surface, but fill spouts, vents, or piping were not observed.

The two tanks discovered were a 500 gallon tank south of die NC Tire crib, and a 1,000 gallon tank located at the east interior telephone pole north of the former NC The facility.

3.4.1 Excavation

While following the piping to the crib, EPMI uncovered an underground storage tank with an approximate capacity of 500 gallons. The tank appeared to be empty. One sample from beneath the tank was coilected, field screened (S-7), and sent to the laboratory for analysis for diesel range hydrocarbons.

Near the east interior telephone pole, EPMI uncovered one underground storage tank with an approximate capacity of 1,000 gallons. Some residual product (approximately one inch) remained in the tank. Soil sample S-11 was collected from beneath tiie tank, field screened, and sent to the laboratory for analysis of diesel range hydrocarbons.

3.4.2 Sampling

Soil sample S-7 was collected and field screened usmg a PID. The sample was coilected beneath the 500 gallon tank at approximately 7 feet below ground surface. The location of the sample is shown in Figure 2. The depth of the sample and the corresponding PID reading is also recorded on

the Figure. The sample was analyzed by Wy'East Environmental Sciences of Portland, Oregon. Sample S-7 was tested for diesel range petroleum hydrocarbons.

Soil sample S-11 was collected and field screened using a PID. The sample was collected beneath the 500 gallon tank at approximately 9 feet below ground surface. The location of the sample is shown in Figure 2. The depth of the sample and the corresponding PID reading is also recorded on the Figure. The sample was analyzed by Wy'East Environmental Sciences of Portland, Oregon. Sample S-11 was tested for diesel range petroleum hydrocarbons. The laboratory did not detect any diesel range petroleum hydrocarbons in this sample.

The sampling protocol can be reviewed in Appendix F. The Tables in Appendix C tabulate the laboratory results as well as the corresponding PID readings for each sample. The laboratory report can be reviewed in Appendix D.

3.4.3 Estimated Volume of Contaminated Soil

These two areas meet the ADEC action levels for a UST site Level A cleanup. The matrix sheet is included in Appendix G. At this time, it appears that only the tanks would need to be removed following all ADEC regulations for the removal of underground storage tanks.

3.5 Dry Cleaners Disposal Area

The former dry cleaners was located on the west end of the property. The historical photographs and the Plat from Public Works provide the building location.

3.5.1 Excavation

Using the historical information from Public Works, and the aerial photographs, EPMI began excavating in the area where the dry cleaning facility was thought to have been located. Three trenches were excavated across the location. Figure 2 shows the location of excavation activities. EPMI did not observe any suspect material in the west trench which was excavated north and south. The trench perpendicular to this trench uncovered four empty drums. The drums were marked by the manufacturer for use in dry cleaning. One sample was collected, field screened, and sent to the laboratory for analysis.

3.5.2 Sampling

Soil sample S-5 was collected and field screened using a PID. The sample was collected in the area where the four drums were discovered at approximately 7 feet below ground surface. The location of the sample is shown in Figure 2. The depth of the sample and the corresponding PID reading is also recorded on the Figure. The sample was analyzed by Wy'East Environmental Sciences of Portland, Oregon. Sample S-5 was tested by Wy'East for VOCs by EPA Method 8260. The solvent Tetrachloroethylene, commonly used by dry cleaning facilities, was the only compound detected.

Soil sample MW-1 S-2 was collected at approximately 35 feet below ground surface in this area during the installation of Monitoring Weil 1. The laboratory analysis showed that the soil contained 2,200 parts per billion (ppb) of Tetrachloroethylene, and 400 ppb Total Xylenes.

The sampling protocol can be reviewed in Appendix F. The Tables in Appendix C provide the laboratory results as weil as the corresponding PID readings for each sample. The laboratory report can be reviewed in Appendix D.

3.5.3 Estimated Volume of Contaminated Soil

The soils may meet the regulatory guidelines for soil contaminated with Tetrachloroethylene. Tetrachloroethylene is a compound for which the regulatory agencies generalily negotiate a cleanup standard. The regulatory guideilne for Tetrachloroethylene in soil with an annual precipitation of less than 40 inches is 160 ppm based on ingestion and 110 ppm on inhalation.

3.6 Dry Cleaners Log Crib

A log crib, similar to the one found near the former NC Tire facility, was uncovered while excavating near the area of the former dry cleaners. The crib was discovered on the southeast end of the former facility.

3.6.1 Excavation

A log crib was uncovered in the area ofithe former dry cleaning business while excavating perpendicular and south of where the drums were found. The material did not have the odor associated with the first crib encountered. The excavation in the crib area was completed to

approximately 12 feet below ground surface. Sample S-6 was collected, field screened, and sent to the laboratory for analysis.

3.6.2 Sampling

Soil sample S-6 was collected approximately 12 feet below ground surface. Soil sample S-6 was collected and field screened using a PID. The location of the sample are shown in Figure 2. The depth of the sample and the corresponding PID reading is also recorded on the Figure. The sample was analyzed by Wy'East Environmental Sciences of Portland, Oregon. Sample S-6 was tested by Wy'East for VOCs by EPA Method 8260 and for metals. The solvent Tetrachloroethylene used by dry cleaning facilities was detected as well as metal contamination.

The sampling protocol can be reviewed in Appendix F. The Tables in Appendix C provide the laboratory results as well as the corresponding PID readings for each sample. The laboratory report can be reviewed in Appendix D.

3.6.3 Estimated Volume of Contaminated Soil

The solls may meet the regulatory guidelines for soil contaminated whh Tetrachloroethylene. The regulatory guideline for Tetrachloroethylene in soll with an annual precipitation of less than 40 inches is 160 ppm based on ingestion and 110 ppm on inhalation.

4.0 MONITORING WELL INSTALLATION

4.1 Monitoring Well Construction

Three monitoring wells were installed at the site. Figure 3 in Appendix A provides the approximate well locations. Each well was drilled to a depth of 45 feet below ground surface using an 8 inch hollow stem auger. Water was encountered in each well at approximately 40 feet below ground surface. The wells were completed with schedule 40, 2 inch diameter, 0.01 slotted PVC well screen from 35 to 34 feet below ground surface. From surface to 35 feet below ground surface, 2 inch diameter riser of PVC blank pipe was used. A filter pack of 10/20 Silica Sand was placed in the annulus around the well screen to a heigth of 3 feet above the slots. A 4 foot seal of Bentonite Chips was placed on top of the Silica sand. An annulus around the riser was filled with sand, and a 2 foot thick surface seal of concrete was placed around the monument, flush with the ground surface. Monitoring well

constmction reports completed by Quailty Environmental Sampling can be reviewed in Appendix H.

4.2 Monitoring Well Development

Prior to collecting groundwater samples, each monitoring well was developed by removing a minimum of 20 casing volumes. The groundwater sampling record can be reviewed in Appendbx H.

4.3 Monitoring Well Sanipling

Soil and groundwater samples were collected during monitoring well construction.

4.3.1 Soil Sampling

Soil samples were collected and field screened with a PID. The solls were observed to be a brown poorly graded medium to coarse sand. Based on the PID results, one soil sample from the MW-1 location was submitted to the laboratory for analysis. Sample MW-1 S-2 was sent to Wy'East for analysis of VOCs by EPA Method 8260, for metals content, and for total petroleum hydrocarbons. The laboratory results can be reviewed in Appendbx C. The laboratory report is presented in Appendix D. The laboratory testing indicates that the soil contained 16 parts per million (ppm) of total petroleum hydrocarbons. This is below the action levels required by the ADEC for soll remediation involving petroleum hydrocarbons at a Level A site. The only two VOCs detected in MW-1 S-2 were Tetrachloroethylene and Total Xylenes. Tetrachloroethylene is a compound used by dry cleaning facllities.

4.3.2 Water Sampling

Water samples were collected from each of the monitoring wells after purging 3 casing volumes from each well. Samples collected were labeled MW-1, MW-2, and MW-3 corresponding to the well from which the sample was collected. Water from MW-1 was analyzed for VOCs, metals, and petroleum hydrocarbons. The analysis showed that metals and petroleum were not detected in the water for MW-1. The only VOC detected in MW-1 was Tetrachloroethylene. This compound is used by dry cleaning facllities.

Water from MW-2 was analyzed for VOCs, metals, and petroleum hydrocarbons. The laboratory did not find any of the compounds above

the detection level of the analysis procedure.

Water from MW-3 was analyzed for VOCs The laboratory did not find any of the compounds above the detection level of the analysis procedure.

5.0 RECOMMENDATIONS

5.1 Former NC Tire Facility

The two underground storage tanks should be removed following the ADEC regulations for underground storage tanks. The piping, hoists, and contaminated soil should also be removed. Assuming the total yardage to be removed is 200 cubic yards, the estimated cost for excavating contaminated soil, removal and disposal of two underground storage tanks, removal and disposal of hoists and associated piping, disposal of 200 gallons of hydraulic fluid, sample collection, laboratory analysis, treatment, confirmation sampling, analysis, site restoration, and reporting is approximately $25,000. This is an estimate and will vary depending upon the scope of work. The work should be completed in conjunction with the action taken concerning the former dry cleaning facility.

5.2 Former Dry Cleaning Facility

The soil and groundwater laboratory analyses of the samples from the area of the former dry cleaning facility displayed levels of Tetrachloroethylene of 2,200 parts per billion (ppb) and 4,250 ppb, respectively. The regulatory guideline for Tetrachloroethylene in soil with an annual precipitation of less than 40 inches is 160 ppm based on ingestion and 110 ppm on inhalation. The soil, other than it leaching to the groundwater, may not be the driving factor for remediation. The guideline for impacted groundwater is 5 ppb. At a concentration of 4,250 ppb, the water is not in compliance. An estimate of groundwater cleanup costs is not practical until the treatment level is discussed with the regulatory agency. EPMI would like to note that Tetrachloroethylene can be treated through aeration and biological treatment, the contaminant is heavier than water, causing it to sink. Because it sinks, it is very difficult to find the horizontal and vertical limits of the contaminated aquifer. Prior to beginning any remedial action, a cleanup level should be negotiated with the regulatory agencies. Also, aquifer characteristics should be identified.

5.3 Alternatives

Risk Based Corrective Action (RBCA) is an option being used as an alternative to remedial action. In a RBCA, the threat that the contaminant at the site poses to human health and the environment is evaluated. The intent of the process is to make recommendations to ADEC using empirical data and conceptual models that the site does not pose a risk to human health or the environment. The RBCA report makes a recommendation to the regulatory agency for an acceptable level of risk at the site for human health and the environment. In order to achieve the level of risk described in the RBCA report, some remedial action, monitoring, or deed restrictions may be required.

The risk to human health and the environment is not known until a RBCA is completed. Some sites cannot be handled by RBCA. The costs associated with RBCA are wide ranging and dependent upon the site characteristics as well as the contaminants. To complete a RBCA, addition site characteristics need defined, as with implementing any remedial option. Once these characteristics are known, a cost estimate can be completed.

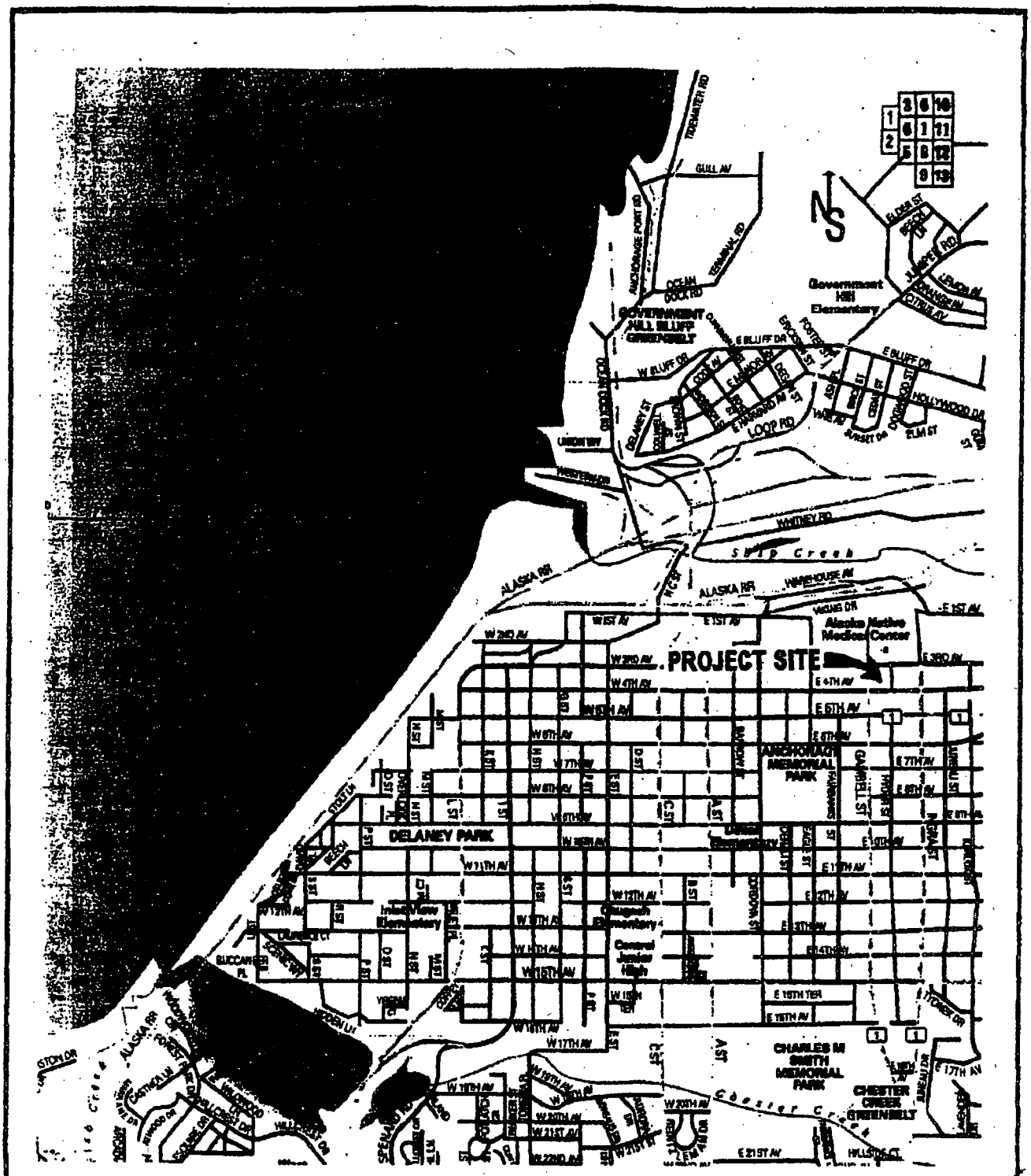
6.0 LIMITATIONS

This report has been prepared to summarize the information and data concerning the limited investigation concerning the areas identified in this report. This investigation was not intended to fully evaluate the entire extent of contaminants that were discovered in the process of this investigation.

This investigation was conducted and the subsequent report was prepared in general accordance with standard of care which existed in Alaska at the time the work was performed. No warranty, expressed or implied, is given. It should be recognized that the definition and evaluation of contaminated soil and groundwater is a difficult and inexact science. Judgments leading to conclusions and recommendations are generally made with an incomplete knowledge of the subsurface and/or historical conditions applicable to the site. More detailed, focused and/or extensive studies including additional subsurface assessments can tend to reduce the inherent uncertainties associated with evaluation of environmental conditions. The opinion expressed herein is based on the information available to and made known to EPMI during our survey, our present understanding of the site conditions, and our judgement in light of such information at the time of the preparation of this opinion. We are not responsible for the accuracy of the information provided to EPMI by individuals or entities that were used by us or others in connection with the preparation of this opinion. This report is an opinion work, and no warranty is either expressed, implied, or made as to the conclusions, advice, and recommendations offered in this report. The opinion expressed herein is for the sole benefit of and may be relied upon only by the Skinner Corporation and their authorized agents. Neither this opinion nor any extracted here from or referenced hereto shall be furnished to, quoted to, or relied upon by any other person, firm, or corporation without the expressed written permission of EPMI.

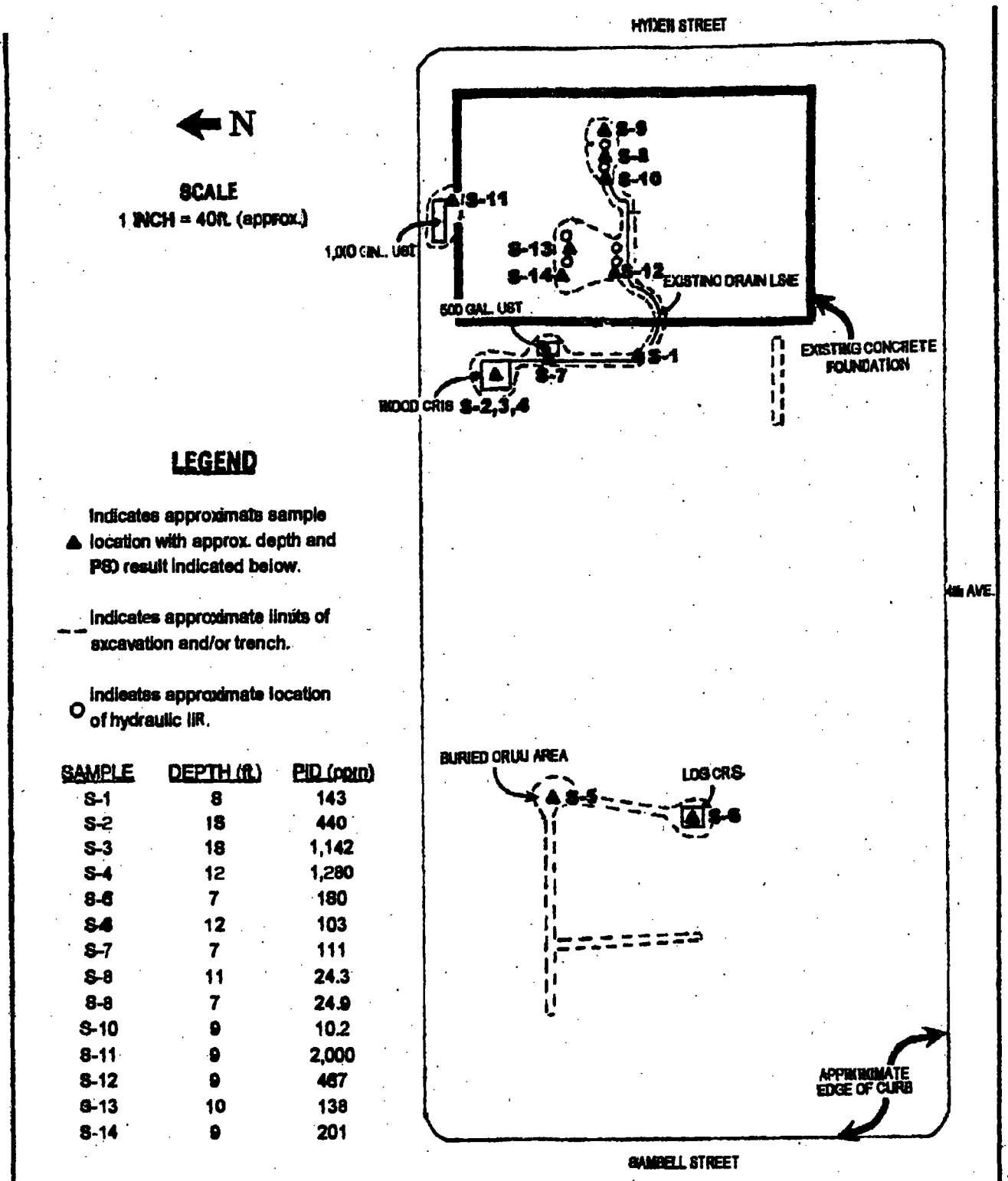
APPENDIX A

FIGURES



QUALITY ENVIRONMENTAL SAMPLING	VICINITY MAP	EPMI 4th A GAMBELL ANCHORAGE, ALASKA

FIGURE 1

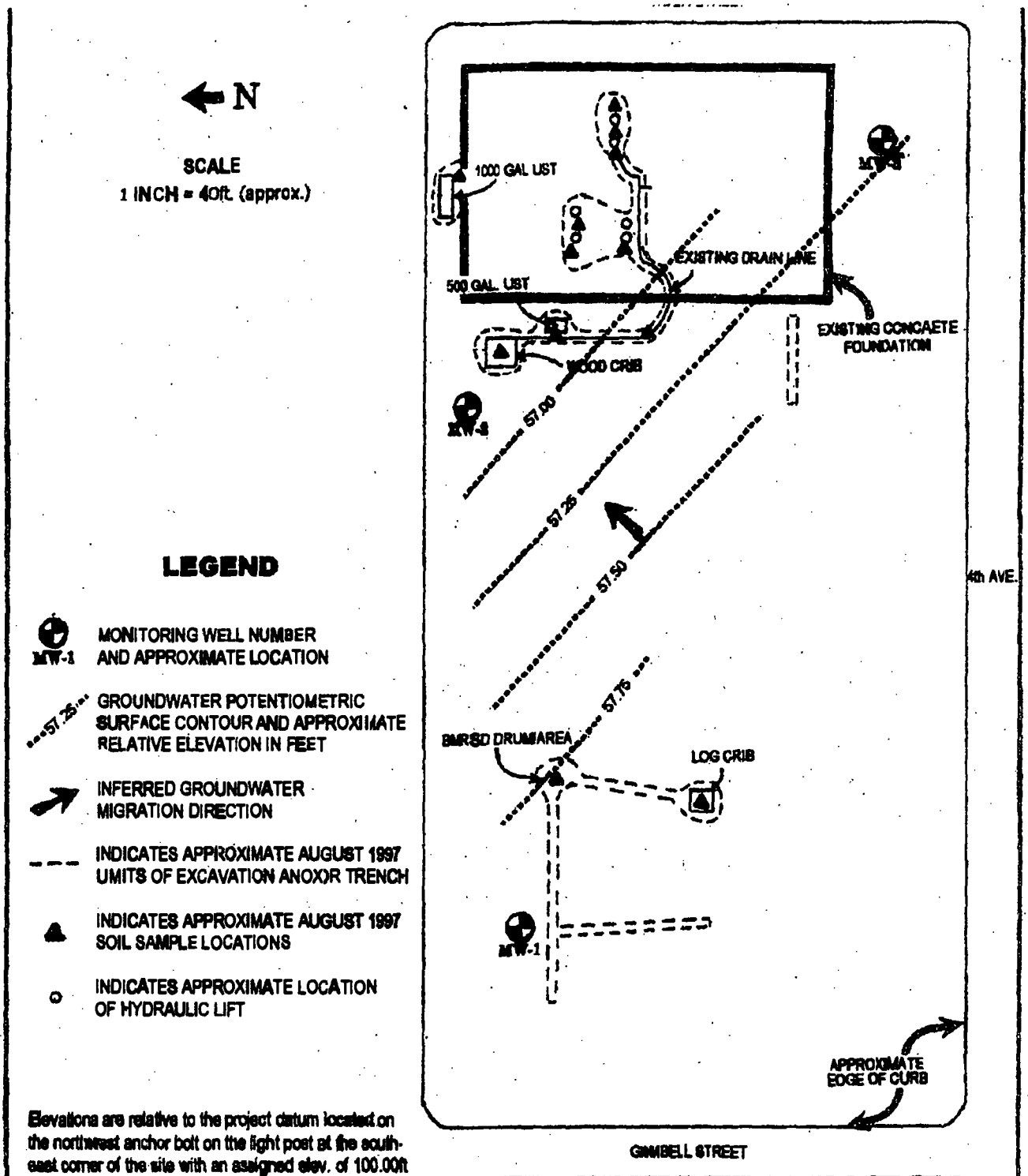


SAMPLE	DEPTH (ft.)	PID (ppm)
S-1	8	143
S-2	18	440
S-3	18	1,142
S-4	12	1,280
S-5	7	180
S-6	12	103
S-7	7	111
S-8	11	24.3
S-9	7	24.9
S-10	9	10.2
S-11	9	2,000
S-12	9	467
S-13	10	138
S-14	9	201

SITE PLAN/SAMPLE LOCATIONS

EPMI
4th & GAMBELL
ANCHORAGE, ALASKA

FIGURE 2



QUALITY ENVIRONMENTAL SAMPLING

SITE PLAN/SAMPLE LOCATIONS

EPMI
4th & GAMBELL
ANCHORAGE, ALASKA

FIGURE 3

APPENDIX C

SAMPLE RESULTS TABLES

TABLE 1 - HYDROCARBON CONTENT IN SOIL			
SAMPLE IDENTIFICATION	PID Reading	AK102 ANALYSIS (parts per million)	AK103 ANALYSIS (parts per million)
S1 - Break in Piping 8' bgs	143	----------	253
S8 - Between Hydro Lift 11' bgs	24.3	----------	4,830
S9 - East Side Hydro Lift 7' bgs	24.6	----------	ND
S10 - West Side Hydro Lift 9' bgs	10.2	----------	ND
S12 - Hydro Reservoir 9' bgs	467	----------	ND
S13 - Between Hydro Lift 10' bgs	138	----------	2,660
S14 - Below Hydro Piping 9' bgs	201	----------	ND
S7 - Below 500 gal UST 7' bgs	111	223	----------
S11 - Below 1,000 gal UST 9' bgs	2,000	ND	----------
MW-1 S-2 - Well 1 at 35' bgs	156	----------	16

TABLE 2 - VOLATILE ORGANIC COMPOUNDS IN SOIL				
ANALYTE	S3	S4	S5	S6
n-Butylbenzene	ND	19,800 ppb	ND	ND
sec-Butylbenzene	ND	15,600 ppb	ND	ND
cis-1,2-Dichloroethylene	ND	800 ppb	ND	ND
Ethylbenzene	ND	5,500 ppb	ND	ND
Isopropylbenzene	ND	2,900 ppb	ND	ND
p-Isopropyltoluenc	ND	102,000 ppb	ND	ND
Naphthalene	ND	8,000 ppb	ND	ND
Tetrachloroethylene	ND	4,500 ppb	3,200 ppb	1,000 ppb
Toluene	ND	9,000 ppb	ND	ND
1,2,4-Trimethlybenzene	ND	178,000 ppb	ND	ND
1,3,5-Trimethlybenzene	ND	49,500 ppb	ND	ND
Total Xylenes	ND	52,000 ppb	ND	ND

*Reported in Parts Per Billion (ppb)

TABLE 3 - METAL ANALYSIS IN SOIL (ppm)					
ANALYTE	S1	S3	S4	S6	MW-1 S-2 TCLP
Ag - Silver	ND	ND	1	ND	
As - Arsenic	3	1	9	7	ND
Ba - Barium	19.0	153	753	2.3	-----
Cd - Cadmium	ND	ND	20	ND	ND
Cr - Chromium	11	10	27	8	ND
Hg - Mercury	ND	ND	0.14	0.15	-----
Pb - Lead	4	4	996	4	ND
Se	ND	ND	ND	ND	-----

TABLE 4 - MONITORING WELL ANALYSIS				
ANALYTE	MW-1 (Water)	MW-1 S-2 TCLP (Soil)	MW-2 (Water)	MW-3 (Water)
TPH (Soil)	-----	16 ppm	-----	-----
TPH (Water)	ND	-----	ND	-----
As - Arsenic	ND	ND	ND	-----
Cd - Cadmium	ND	ND	ND	-----
Cr - Chromium	ND	ND	ND	-----
Pb - Lead	ND	ND	ND	-----
Tetrachloroethylene	4,250 ppb	2,200 ppb	ND	ND
Other VOCs	ND	ND	ND	ND

APPENDIX G

ADEC MATRIX SHEET

ADEC SOIL CLEANUP LEVEL MATRIX TABLE

SITE CHARACTERISTIC	POSSIBLE SCORE	SCORE
1. Depth to Subsurface < 5 feet 5 to 15 feet 15 to 25 feet 25 to 50 feet > 50 feet	 (10) (8) (6) (4) (1)	4
2. Mean Annual Precipittion > 40 inches 25 to 40 inches 15 to 25 inches < 15 inches	 (10) (5) (3) (1)	5
3. Soil Type (Unified Soil Classification) Clean, coars-grained soils Coarse-grained soils with fines Fine-grained sils (low organic content) Fined-grained soils (bigh organic content)	 (10) (8) (3) (1)	8
4. Potential Receptors Public Well within 1,000 feet or Private well(s) widhin 500 feet Municipal/private well within ½ mile Municipal/private well within 1 mile No known well within ½ mile No known wall within 1 mile Non-potable groundwater	 (15) (12) (8) (6) (4) (1)	12
5. Volume of Contaminated Soil >500 cubic yards 100 to 500 cubic yards 25 to 100 cubic yards >De Minimis to 25 cubic yards De Minimis	 (10) (8) (5) (2) (0)	8

Matrix Score 37	Cleanup Level in mg/kg			
	Diesel Range	Gasoline Range	Benzene	BTEX
Category A >40	100	50	0.1	10
Category B 27 to 40	200	100	0.5	15
Category C 21 to 26	1,000	500	0.5	50
Category D < 20	2,000	1,000	0.5	100

APPENDIX H

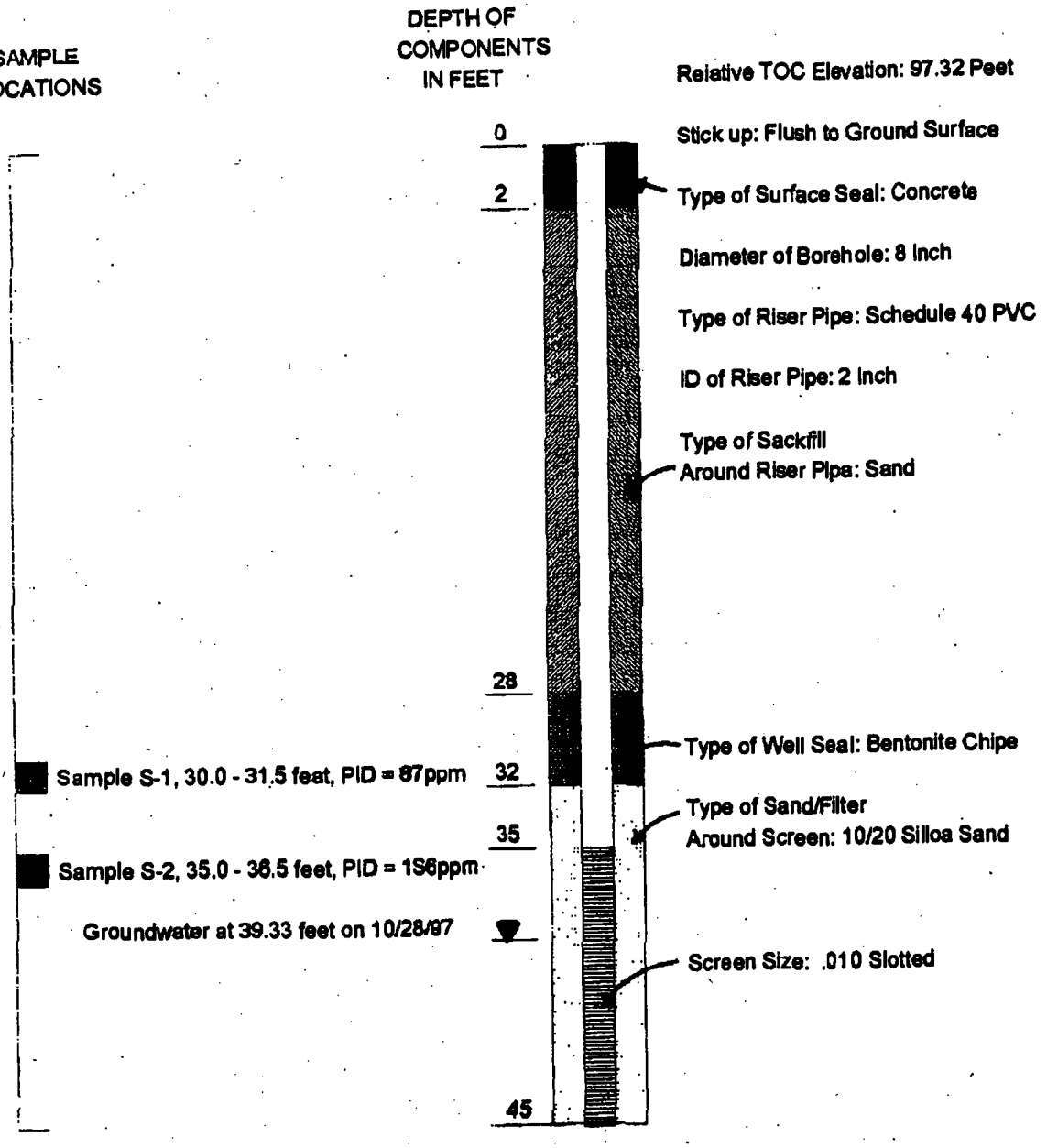
MONITORING WELL REPORTS

Quality Environmental Sampling

MONITORING WELL INSTALLATION REPORT

Project Name: EPMI 4lh & Gambell
Project Location: Anchorage, Alaska
Installation Date: October 21, 1997

Well No.: MW-1
Drilling Method: Mobile B-61, 8 in. Hollow Stem Auger
Observer: Cliff Morrison, QES



Remarks: _____

Quality Environmental Sampling

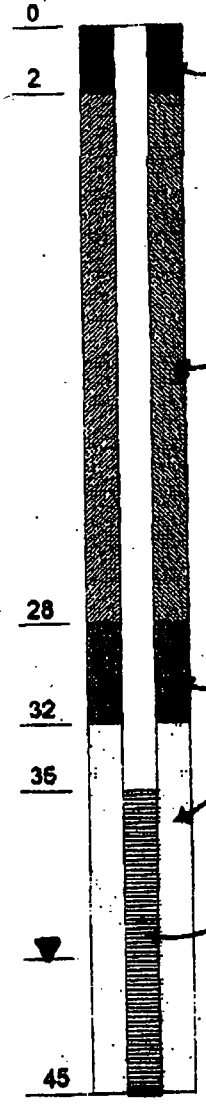
MONITORING WELL INSTALLATION REPORT

Project Name: EPMI 4th & Gambell
Project Location: Anchorage, Alaska
Installation Date: October 21, 1997

Well No.: MW-2
Drilling Method: Mobile B-61, 8 in. Hollow Stem Auger
Observer: Cliff Morrison, QES

SAMPLE LOCATIONS

DEPTH OF COMPONENTS IN FEET



Relative TOC Elevation: 98.13 Feet

Stick up: Flush to Ground Surface

Type of Surface Seal: Concrete

Diameter of Borehole: 8 inch

Type of Riser Pipe: Schedule 40 PVC

ID of Riser Pipe: 2 inch

Type of Backfill Around Riser Pipe: Sand

Type of Well Seal: Bentonite Chips

Type of Sand/Filter Around Screen: 10/20 Silica Sand

Screen Size: .010 Slotted

Sample S-1, 35.0 - 38.5 feet, PID = 5ppm

Sample S-2, 40.0 - 41.5 feet, PID = 6ppm

Groundwater at 41.32 feet on 10/28/97

Remarks: _____

Quality Environmental Sampling

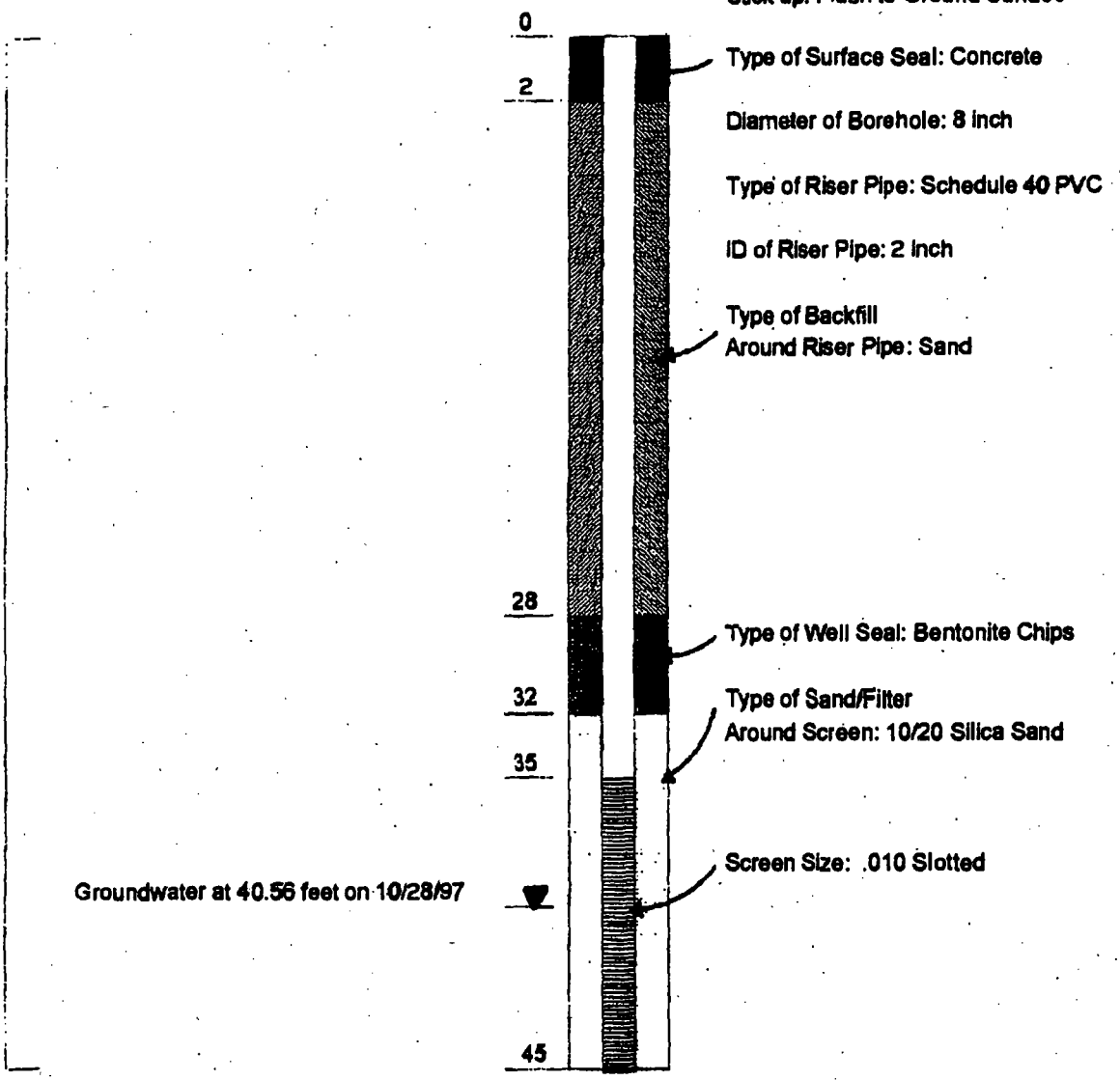
MONITORING WELL INSTALLATION REPORT

Project Name: EPMI 4th & Gambell
Project Location: Anchorage, Alaska
Installation Date: October 22, 1997

Well No.: MW-3
Drilling Method: Mobile 6-61, 8 in. Hollow Stem Auger
Observer: Cliff Morrison, QES

SAMPLE LOCATIONS

DEPTH OF COMPONENTS IN FEET



Relative TOC Elevation: 97.77 Feet

Stick up: Flush to Ground Surface

Type of Surface Seal: Concrete

Diameter of Borehole: 8 inch

Type of Riser Pipe: Schedule 40 PVC

ID of Riser Pipe: 2 inch

Type of Backfill Around Riser Pipe: Sand

Type of Well Seal: Bentonite Chips

Type of Sand/Filter Around Screen: 10/20 Silica Sand

Screen Size: .010 Slotted

Remarks: _____

Groundwater Monitoring and Sampling Record

Facility Number: EDMT
Street Address: 444 E 6OMBELL
City, State: ANCHORAGE, ALASKA

Sampling Personnel: CLIFF MORRISON / PAT STANTON

Monitor Well Number	MW-3	MW-2	MW-1					
General Data								
Well Accessible (Y/N)	Y	〃	〃					
Well Diameter	2"	〃	〃					
Depth to bottom of Well (ft) (From MP)	44.8'	44.8	44.2					
Height of Water Column in Well (ft)	~4.5	~4	~5					
Liquid Hydrocarbon or Sheen (Y/N)	N	N	N					
Depth to Water (hold/cut)	40.47'	41.35'	39.26'					
Depth to Hydrocarbon (hold/cut)	NA	NA	NA					
Measurement Date and Time	10/26/97	〃	〃					
	1015	1025	1040					
Well Purging Data								
Purging Technique	BAILER	〃	〃					
Gallons Purged	~2.5	~2.5	~2.5					
Casing Volumes Purged *	3	3	3					
Well Sampling Data								
Sample ID on C.O.C.	MW-3	MW-2	MW-1					
Sampling Date	10/25/97	〃	〃					
Sampling Time	1300	1320	1340					
Sampling Technique	BAILER	〃	〃					
Sample Preservation	HCl/Ice	〃	〃					
Observations								
Sheen (Y/N)	N	N	N					
Odor (Y/N)	*	*	*					

Comments

* NO ODOR OBSERVATION MADE

10/28/97 "DEPTH TO WATER" MEASUREMENTS
MW-1 = 39.33'
MW-2 = 41.32'
MW-3 = 40.56'

NOTE: All measurements should be referenced from top of casing at surveyed measuring point, unless otherwise documented on this form.

* In general, three casing volumes should be removed or the well should be allowed to recover to at least 60% of the pre-purge staticbefore sampling.